

## **II. WASTEWATER TREATMENT AREA**

**A. Field Constructed Tanks** – Two tanks constructed of reinforced concrete (wall thicknesses that range from 7 feet at the base to about 1.5 feet at the top, bottoms between 2 to 3 feet thick) have capacities of 225,500 gallons each. One tank is constructed from steel surrounded by concrete blocks, capacity of 588,000 gallons. The tanks were initially constructed to store fuel oil for mill operations. In later years, tanks were used for phase separation of waste oil/water mixtures generated in the wastewater process.

- Soils from two holes cored through the bottom of each of the concrete tanks in 1992 had TPH (EPA 8015) concentrations at 650 and 1070 mg/kg.
- The tanks were emptied in the fall of 1989.
- Two monitoring wells were installed and various soil samples were collected and analyzed in 1989; three additional wells were installed near the field-constructed tanks in 1990. Soil samples taken from two monitoring wells close to and down gradient from these tanks showed TPH concentrations at 2,300 ppm at 63-65 feet deep and 6,400 ppm at 58.5 to 60.5 feet deep.
- A composite soil sample collected from the upper six inches of petroleum-stained soils located next to the tanks contained 65,000 ppm TPH, 230 ppm chromium, 410 ppm lead, 15 ppm acenaphthylene, and 0.19 ppm fluoranthene.
- These tanks are probably a primary source of petroleum hydrocarbon in ground water in the wastewater area.
- Identified as a Solid Waste Management Unit (SWMU) in the RCRA Facility Assessment Report (RAF).

### Comments:

Lateral extent and vertical extent of soil contamination are not defined. Ground water contamination source area is not known.

Contaminants to be evaluated further should include TPH, PCBs, VOCs, PAHs, and total metals.

**B. Hoffman Tank Removal (1990)** – This 6,000-gallon Hoffman Tank, located south of the Wastewater Treatment Plant, was an oily wastewater flow-through process tank associated with the Wastewater Treatment system.

- About 6,500 cubic yards of soils were removed. Excavation depth was up to 35 feet.
- Composite site and bottom samples had TPH concentrations ranging from 140 to 33,000 ppm TPH, <0.66 to 0.52 ppm PCBs. The 33,000 ppm TPH concentration is from a sample underneath the Wastewater Treatment Plant footings.
- A 50 mil PVC geomembrane liner was installed over this area.

- This tank was probably the second largest source of petroleum hydrocarbons to ground water in the Wastewater Area.
- Identified as a Solid Waste Management Unit (SWMU) in the RCRA Facility Assessment Report (RAF).

Comments:

Residual soil contamination remains after excavation up to 35 feet. Lateral extent and vertical extent of contamination need to be further evaluated.

Contaminants to be evaluated should include TPH, PCBs, VOC, PAHs, and total metals.

**C. Hydrogen Sulfide Scrubber Building Excavation (1998)** – Petroleum contamination was discovered when Kaiser was excavating soil to construct hydrogen sulfide scrubber building. Petroleum contamination is believed to be from the former Hoffman tank. Area is located on the southwest side of the wastewater treatment plant.

- Because of nearby buildings, excavation was limited to about 20 by 20 feet and up to 7 feet deep. Side and bottom soil samples had TPH concentrations up to 20,000 mg/kg diesel and 22,000 mg/kg oil. Low concentrations of VOCs, PAHs, PCBs, and metals were also detected.
- The scrubber building was constructed and the immediate surrounding area has been paved.

Comments:

Lateral extent and vertical extent of contamination are not defined.

Contaminants to be evaluated should include TPH, PCBs, VOCs, PAHs, and total metals.

Presence or absence of soil gas needs to be evaluated.

**D. Wastewater Lagoon** - The wastewater lagoon is situated on the western portion of the wastewater treatment area.

- Samples of sludge taken from the lagoon showed PCB concentrations ranging from 78 to 320 mg/kg and <0.5 to 0.7 mg/kg hexavalent chromium.
- The lagoon sludge was removed in 1992.
- Following removal of the sludge and the liner, random samples were collected from the exposed subbase surface.
- Sand and soil were removed and final verification sampling results following all excavation activities indicated no exceedance above MTCA Method A cleanup levels for TPH, PCBs, VOCs, semi-VOCs, and priority pollutant metals.

- Accumulated lagoon sludges were again removed in 1998. No data on sampling of the sludges were found in the site file.

Comments:

There needs to be further sampling of the lagoon sludges

Source of sludge contamination in the lagoon needs to be identified.

### **III. OIL RECLAMATION BUILDING/TRANSFER LINES AREAS**

- A. Oil Reclamation Building (ORB) Area** – Investigations conducted in 1996 to evaluate nature and extent of potential contamination.
- Horizontal extent of soil containing TPH exceeding 200 mg/kg begins at the northwest corner of the ORB and extends west approximately 900 feet and south approximately 400 feet; total area encompasses approximately 60,000 square feet. TPH detected include mostly kerosene, diesel, and oil.
  - Except at three locations, petroleum-contaminated soil is limited to the upper 2 to 5 feet. At one man-made depression, contaminated soil was detected to depths up to 70 feet. At another man-made depression, contamination was detected to 20 feet. Around the perimeter of the ORB, contamination was detected at depths up to 20 feet below the ground surface (the total depth of the exploration) and may extend deeper. These depths were detected as much as 50 feet away from the edge of the building.
  - The recommendation was to put an asphalt cap over the man-made depressions and to install a geomembrane/concrete cap around the perimeter of the ORB. Limited soil excavation would be involved to prepare for installation of the cap around the ORB.

**Comments:**

Vertical extent and lateral extent of contamination around the ORB building and the man-made depressions need to be defined.

Contaminants shall include TPH, PCBs, VOC, PAHs, and total metals.

Soil vapor in vicinity of the ORB needs to be evaluated.

- B. Oil-Water Emulsion Spill (1992)** – Oil-water emulsion was released when a backhoe hit a pipeline while digging a trench.
- Stained soils were excavated up to 4 feet deep. Additional soil excavation was performed on two residual hot spots.
  - Verification samples after the excavations show TPH concentrations less than 200 mg/kg.
- C. Wastewater Emulsion Transfer Line Leak Area/Former Rail Car Unloading (RCU) Area(1998)** – A leak in the transfer line that carried oil-contaminated wastewater from the Oil Reclamation Building to the Wastewater Treatment area was detected near the rail car unloading area.
- About 500 cubic yards of soils were removed.

- Area of soil contamination (TPH>200 mg/kg) extends east and north of the RCU area. The affected area encompasses approximately 52,500 square feet.
- TPH-affected soil appears to be limited to the upper few feet of the soil column. However, high TPH concentrations were detected in the deepest soil sample 44 feet below the ground surface. Area over soils known to be contaminated beyond 15 feet was capped with asphalt.

Comments:

Need to evaluate lateral and vertical extent of contamination.

Contaminants to be evaluated should include TPH, PCBs, VOCs, PAHs, and total metals.

**D. Oil/Emulsion Transfer Line Release (2004)**

- Two samples collected from the pipe bedding sand showed 29,000 mg/kg diesel, 33,000 residual range organics and 12,000 mg/kg diesel, 15,000 mg/kg residual range organics (NWTPH-Dx).
- In another area, TPH concentration was measured at 4,100 mg/kg diesel, 6,900 mg/kg residual range organics.

Comments:

Need to evaluate lateral and vertical extent of contamination.

Contaminants to be evaluated should include TPH, PCBs, VOCs, PAHs, and total metals.

**E. Fuel Oil Spill (1980)** – Up to 10,000 gallons of #2 fuel oil was discharged to the ground according to Kaiser. Ecology's onsite investigations estimated around 50,000 to 100,000 gallons were released to the ground.

- Product was never recovered. No soils investigations were conducted.

Comments:

Extent of soil contamination was never investigated; need to evaluate lateral and vertical extent of contaminations.

Contaminants to be evaluated should include TPH, VOCs, sVOCs, and total metals.

#### **IV. COLD MILL/FINISHING AREAS**

##### **A. Continuous Can Process Line (CCPL) Investigation (1992)**

- CCPL equipment and tanks were removed in 1991. Approximately 733 stained soils, concrete, steel and floor blocks were hauled to Arlington for disposal.
- Total chromium concentrations in post-excavation surface soil samples ranged from 26 to 340 mg/Kg.
- Total chromium concentrations at three locations on the CCPL pit floor through the 18 inch thick concrete ranged from 12 to 18 mg/kg.
- Total chromium concentrations in the concrete pit walls/floor samples ranged from 19 to 470 mg/kg.
- Ground water collected from monitoring a monitoring well did not indicate any ground water quality concerns.

##### **Comments:**

Hexavalent chromium was not detected in most samples. Total chromium concentrations (assuming mostly trivalent chromium) are all below the Method B unrestricted land use cleanup levels of 120,000 mg/Kg.

Lateral and vertical distributions of chromium should be evaluated to determine if residual chromium in soil are potential chromium sources to ground water.

##### **B. Chromium Transfer Line (CTL) (1990-1992)**

- Composite soil samples concentrations ranged from 15 to 2400 mg/kg total chromium; <1 mg/kg hexavalent chromium for all samples.
- Subsurface soil concentrations ranged from 6 to 16,000 mg/Kg total chromium, <0.1 to 29 mg/kg hexavalent chromium.
- Four monitoring wells were installed near the CTL. Chromium was not detected in ground water.
- 400 feet of CTL, two concrete sumps, associated sludge, storm drain, and underground storage tank were removed
- Surface soils were stripped.
- 9,212 tons of contaminated soil, pipe, and concrete debris were excavated or removed. Excavation extended to 15 to 18 feet. Post excavation samples indicate concentration of total chromium left in place ranges from 61 to 910 mg/kg beneath the main excavation, up to 5,350 mg/kg total chromium in soil adjacent to building footings, and 9 to 220 mg/kg after surface stripping.
- Excavation was backfilled.

##### **Comment:**

Lateral and vertical distributions of chromium should be evaluated to determine if residual chromium in soil is a potential source of chromium in ground water.

**C. Cold Mill Electrical Grounding Pit (2004)**

- Six (6) inches of oil/water liquid was observed in an electrical grounding pit.
- Samples indicate that the liquid is essentially all oil. There is some elevated lead in the oil – 37 mg/kg.
- The soil/sludge sample had 90,000 mg/kg diesel, 6,300 mg/Kg residual range organics, 1190 mg/kg lead. No PCBs or significant levels of VOCs or Semi-VOCs were found.

**Comment:**

Kaiser has very recently installed monitoring wells in the Cold Mill Area. Extent of contamination, including the smear zone, should be evaluated.

Contaminants to be evaluated should include TPH, VOCs, sVOCs, and total metals.

Scale in Feet

Proposed Exploration Location and Number

### Hot Line/Casting Investigation

### Case Study 1: Fuel Oil Line Investigation

### Cold Mill Investigation

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Former Discharge Ravine South/  
Former Discharge Ravine West Investigation

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Figure 1